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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/603,684	06/26/2003	Mahmoud H. Abd Elhamid	GP-302186	3780

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EXAMINER

CANTELMO, GREGG

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 02/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/603,684

Applicant(s)

ABD ELHAMID ET AL.

Examiner

Gregg Cantelmo

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) 34-47 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-22 and 24-33 is/are rejected.
- 7) ☒ Claim(s) 5 and 23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6/26/03.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 34-47 withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected method, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on January 31, 2006.

Applicant's election with traverse of the restriction in the reply filed on January 31, 2006 is acknowledged. The traversal is on the ground(s) that the search for both inventions would not be burdensome. This is not found persuasive because it fails to show how the two inventions are not distinct or establish that the product cannot be made by other methods as also stated in the original restriction.

The requirement is still deemed proper and is therefore made FINAL.

Priority

2. Applicants claim to U.S. Provisional Application No. 60/394,647, filed on July 9, 2002 is acknowledged.

Information Disclosure Statement

3. The information disclosure statement filed June 26, 2003 has been placed in the application file and the information referred to therein has been considered as to the merits.

Drawings

4. The drawings received June 26, 2003 are acceptable for examination purposes.

Specification

5. The disclosure is objected to because of the following informalities: the status of at least some of the identified U.S. Patent Applications in the specification have matured into a corresponding U.S. Patent and should be updated. For example Ser. No. 09/781,189, identified on page 5 of the specification is now U.S. Patent No. 6,607,857, issued August 19, 2003. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 12 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The specification fails to sufficiently disclose the types of polymers appreciated as being suitable polymers for the mesh of claims 12 and 28. The polymer is indefinite since it fails to provide reasonable disclosure as to what polymers were encompassed by the term.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 4, 6-11, 13, 16-18, 21, 22, 25-27, 29 and 32-33 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,971,726 (Maeno).

Maeno discloses a sheet comprising a mixture of polypropylene and expanded graphite (Experiments 1-10 and 13-15 as applied to claim 1).

In Experiment 3, the expanded graphite average particle size is 0.5 mm (as applied to claim 4).

The graphite inherently extends across the sheet to provide the requisite conductive path to the material.

The polymeric material is polypropylene (Examples 1-16 as applied to claims 7 and 8).

The expanded graphite has an inherent degree of compression relative to the amount of force exerted on the sheet. Note that the claims fail to specify any value or range of values for the extent of the compression and thus can be any degree of compression (as applied to claim 9).

In addition, the voids where the resin is present is construed to be equivalent to the pores present in the graphite material (as applied to claim 10). Note that the end product is not porous else it would not effectively function as a separator.

In Examples 1-9 and 13, carbon black is added to the mixture and broadly exemplifies a filler (as applied to claim 11).

Maeno discloses a sheet comprising a mixture of polypropylene and expanded graphite (Experiments 1-10 and 13-15 as applied to claim 18).

The compressible material is expanded graphite, as discussed above (applied to claim 21).

In Experiment 3, the expanded graphite average particle size is 0.5 mm (as applied to claim 22).

The polymeric material is polypropylene (Examples 1-16 as applied to claims 25 and 26).

In Examples 1-9 and 13, carbon black is added to the mixture and broadly exemplifies a filler (as applied to claim 27).

Considering that Maeno teaches of using the same expanded graphite in the same resin and both are used as a conductive sheet, there is a reasonable expectation that composite separators of Maeno would inherently exhibit the same claimed permeation and specific resistance requirements, absent clear evidence to the contrary.

9. Claims 1, 7-13, 16-18, 21, 25-29 and 32-33 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 2000-017179 (JP '179).

JP '179 discloses a sheet comprising a mixture of polyester, expanded graphite and a filler (abstract as applied to claim 1).

The polymeric material is polyester (abstract as applied to claims 7 and 8).

The expanded graphite has an inherent degree of compression relative to the amount of force exerted on the sheet. Note that the claims fail to specify any value or range of values for the extent of the compression and thus can be any degree of compression (as applied to claim 9).

In addition, the voids where the resin is present is construed to be equivalent to the pores present in the graphite material (as applied to claim 10). Note that the end product is not porous else it would not effectively function as a separator.

The filler can be either carbon fibers or glass fibers (abstract as applied to claims 11 and 12).

JP '179 discloses a sheet comprising a mixture of polypropylene and expanded graphite, expanded graphite is inherently compressible compared to non-expanded graphite (Experiments 1-10 and 13-15 as applied to claim 18).

The compressible material is expanded graphite, as discussed above (applied to claim 21).

The polymeric material is polyester (abstract as applied to claims 25 and 26).

The filler can be either carbon fibers or glass fibers (abstract as applied to claims 27 and 28).

Considering that JP '179 teaches of using the same expanded graphite in the same resin and both are used as a conductive separator in fuel cell technology, there is a reasonable expectation that composite separators of JP '179 would inherently exhibit the same claimed permeation and specific resistance requirements, absent clear evidence to the contrary. Also see table 2 on page 7 which shows resistance levels which are substantially lower than the threshold required in the instant claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 2, 3, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Maeno or JP '179 in view of U.S. Patent Application Publication No. 2002/0182473 (Blunk)

The teachings of Maeno and JP '179 have been discussed above and are incorporated herein, independent of one another.

The difference not yet discussed is of the volume percent of the expanded graphite (claims 2 and 3) or compressible material (claims 19 and 20).

Blunk discloses providing a composite separator wherein the conductive graphite material is present in an amount which is less than 50 vol.% (paragraph 25 on page 2).

The motivation for decreasing the volume of the conductive graphite and increasing the volume of the resin is to improve the mechanical properties of the separator while maintaining excellent electrical conductivity.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of either Maeno or JP '179 by decreasing the volume of the conductive graphite and increasing the volume of the resin since it would have improved the mechanical properties of the separator while maintained excellent electrical conductivity.

11. Claims 14-15 and 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Maeno or JP '179 in view of U.S. Patent No. 6,811,918 (Blunk).

The teachings of Maeno and JP '179 have been discussed above and are incorporated herein, independent of one another.

The differences between claims 14-15 and 30-31 and either Maeno or JP '179 is that neither Maeno nor JP '179 teaches of the conductive layer disposed over the separator (claims 14 and 30) or of the conductive layer material being selected from the group consisting of gold, silver, platinum, carbon, palladium, rhodium and ruthenium.

Blunk discloses a composite bipolar separator where metal films are disposed on the outer surfaces of the separator. The surface is coated with materials including gold, ruthenium, palladium, rhodium and platinum (col. 9, ll. 35-45).

The motivation for providing a metal film on the outer surface of the composite separator is to reduce the contact resistance of the components

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of either Maeno or JP '179 by providing a metal film on the outer surface of the composite separator since it would have reduced the contact resistance of the components.

12. Claims 6 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Maeno or JP '179 in view of U.S. Patent No. 6,811,918 (Blunk).

The teachings of Maeno and JP '179 have been discussed above and are incorporated herein, independent of one another.

The difference between claims 6 and 24 and either Maeno or JP '179 is that neither Maeno nor JP '179 teaches of the graphite extending across the separator plate.

Blunk discloses a composite bipolar separator where the graphite bridges 115 extends through the separator plate 110 (col. 9, ll. 35-45).

This serves to conduct current flow through the composite.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of either Maeno or JP '179 by providing graphite to extend across the separator since it would have provided electrical flow paths through the composite material.

Allowable Subject Matter

13. Claims 5 and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: none of the prior art of record appears to teach, fairly suggest or render obvious the invention of claims 5 or 23. In particular: of the graphite or compressible material being of a size greater than 10 % of the final plate thickness.

In either Maeno or JP '179 the graphite or compressible material is neither taught nor disclosed to have a size greater than 10% of the final plate thickness. The remaining prior art of record fails to teach or suggest this limitation as defined in claims 5 or 23.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent No. 3,573,122 discloses a composite sheet comprising a resin and expanded graphite. U.S. Patent No. 4,265,952 discloses a composite sheet comprising a resin and expanded graphite. U.S. Patent No. 5,776,372 discloses a composite sheet comprising a resin and expanded graphite.

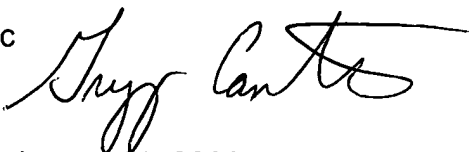
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is (571) 272-1283. The examiner can normally be reached on Monday to Thursday from 9 a.m. to 6 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan, can be reached on (571) 272-1292. Information regarding the

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status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gregg Cantelmo
Primary Examiner
Art Unit 1745

gc

A handwritten signature in black ink, appearing to read "Gregg Cantelmo", written in a cursive style.

February 11, 2006